CONTENTS OF VOLUME 93

Vol. 93A, No. 1

SPECIAL ISSUE FESTSCHRIFT IN HONOUR OF PROFESSOR GERALD KERKUT

Introduction		
R. J. Walker	1	
Mini Reviews and General Papers		
G. A. Kerkut	9	Studying the isolated central nervous system; a report on 35 years: more inquisitive than acquisitive
R. J. Walker and L. Holden-Dye	25	Commentary on the evolution of transmitters, receptors and ion channels in invertebrates
G. A. Cottrell	41	The biology of the FMRFamide-series of peptides in molluscs with special reference to Helix
K. A. Green, A. Cadogan and G. A. Cottrell	47	Nicotinic-type unitary currents in Helix neurons
M. S. Laverack	53	The abdomen-uropod muscle receptor organ of the lobsters, Panulirus argus and Homarus gammarus
L. D. Leake	63	Use of an identified neurone in pesticide research
D. R. Gardner and B. L. Brezden	69	Frescon: a possible new pharmacological tool
V. W. Pentreath	77	Invertebrate glial cells
W. D. Nightingale and R. M. Pitman	85	Ionic currents in the soma of an identified cockroach moto- neurone recorded under voltage-clamp
J. Chad	95	Inactivation of calcium channels
C. A. Marsden, A. J. Sleight, K. C. F. Fone, J. V. Jonson, F. Crespi, K. F. Martin, J. C. Garrett and G. W. Bennett	107	Functional identification of 5HT receptor subtypes
R. M. A. P. Ridge	115	Motor unit organization in developing muscle
J. Honeycombe and R. Anand	125	Molecular analysis of the Duchenne muscular dystrophy locus
M. E. M. Kelly, P. Traynor and P. A. Smith	133	Amphibian sympathetic ganglia as a model system for investi- gating regeneration in the vertebrate peripheral nervous system
A. R. Crossman	141	Neural mechanisms in disorders of movement
J. Bagust, G. A. Kerkut and N. I. A. Rakkah	151	The dorsal root reflex in isolated mammalian spinal cord
J. Bagust	161	Analysis of extracellular potentials using an IBM PC
A. E. King and S. W. N. Thompson	171	Characterization of deep dorsal horn neurones in the rat spinal cord in vitro: synaptic and excitatory amino acid induced excitations

S. K. Long	177	Amino acid pharmacology in a mature rat spinal cord preparation in vitro
M. A. Kai-Kai	183	Cytochemistry of the trigeminal and dorsal root ganglia and spinal cord of the rat
J. D. C. Lambert, R. S. G. Jones, M. Andreasen, M. S. Jensen and U. Heinemann	195	The role of excitatory amino acids in synaptic transmission in the hippocampus
C. E. Herron and I. D. Forsythe	203	Hippocampal synaptic transmission: regulation of the NMDA receptor-mediated component
H. V. Wheal	211	Function of synapses in the CA1 region of the hippocampus: their contribution to the generation or control of epileptiform activity
J. G. Connolly	221	Structure-function relationships in nicotinic acetylcholine receptors
P. C. Emson	233	Hybridization histochemistry or in situ hybridization in the study of neuronal gene expression
P. V. Taberner	241	The GABA system in functional tolerance and dependence following barbiturates, benzodiazepines or ethanol—correlation or causality?
G. Tunnicliff	247	Inhibitors of brain GABA aminotransferase
P. W. Beesley	255	Immunological approaches to the study of synaptic glyco-proteins
S. Berry and L. W. Haynes	267	The opiomelanocortin peptide family: neuronal expression and modulation of neural cellular development and regeneration in the central nervous system
T. Durkin	273	Central cholinergic pathways and learning and memory processes: presynaptic aspects
I. O. Adeoshun and E. B. Ezenwanne	281	The effects of increasing pulmonary stretch and posture on sinus arrhythmia
J. T. R. Fitzsimons, N. V. Orson and A. A. El-Aaser	285	Effects of soyabean and ascorbic acid on experimental carcinogenesis
P. Abraham	291	Two measures of mental illness: Contingent Negative Variation and Spiral After-Effect
P. B. Bennett	295	Physiological limitations to underwater exploration and work
J. W. Commissiong and Y. Sauvé	301	The physiological basis of transplantation of fetal catechol- aminergic neurons in the transected spinal cord of the rat
	ı	'ol. 93A, No. 2
10.1 p. 1		
Mini Review C. Lodd Process	200	

C. Ladd Prosser

309 Comparative physiology and biochemistry: challenges for the future

General Papers

D. W. Diamond, L. K. Scott, R. B. Forward Jr and W. Kirby-Smith 313 Respiration and osmoregulation of the estuarine crab, Rhithropanopeus harrisii (Gould): effects of the herbicide, Alachlor

S. G. Condò, A. Bellelli, M. Brunori, 319 The functional properties of amphibian hemoglobin: the case M. Corda, M. G. Pellegrini, of Salamander salamander and Hydromantes genei E. M. Clementi and B. Giardina N. S. Shelud'ko and N. K. Preminger 327 Myosin-actin weight ratio in phasic and tonic parts of scallop adductor F. Geiser, R. V. Baudinette 331 The effect of temperature on isolated perfused hearts of and E. J. McMurchie heterothermic marsupials R. Rosebrough, J. McMurtry, 337 Comparison between constant-protein, calorie-restricted and J. Proudman and N. Steele protein-restricted, calorie-restricted diets on growth, in vitro lipogenesis and plasma growth hormone, thyroxine, triiodothyronine and somatomedin-C (Sm-C) of young chickens C. Busch 345 Metabolic rate and thermoregulation in two species of tucotuco, Ctenomys talarum and Ctenomys australis (Caviomorpha, Octodontidae) 349 Liver function and protein binding in camels Z. Ben-Zvi, C. van Creveld and R. Yagil J. D. Thomas 353 The comparative ecological biochemistry of sugar chemoreception and transport in freshwater snails and other aquatic organisms 375 Existence and possible role of a substance immunologically C. Gadenne, M. Trabelsi and L. Lavenseau related to insulin in the midgut of the European corn borer, Ostrinia nubilalis (Hbn.) A. M. Brown and B. J. Baum System A amino acid transport in a rat submandibular ductal cell line T. K. Baumiller and M. LaBarbera 391 Metabolic rates of Caribbean crinoids (Echinodermata), with special reference to deep-water stalked and stalkless taxa D. Timothy J. Littlewood 395 Thermal tolerance and the effects of temperature on air-gaping in the mangrove oyster, Crassostrea rhizophorae U. Midtgård 399 A morphometric study of structures important for cold resistance in the arctic Iceland gull compared to herring gulls 403 Postnatal development of the hepatobiliary transport of P. S. Collado, L. A. Garcia-Pardo, phenolsulfonphthalein in rats M. E. Muñoz and J. Gonzalez J. Fernández, J. Gutiérrez, M. Carrillo, 407 Annual cycle of plasma lipids in sea bass, Dicentrarchus labrax L.: effects of environmental conditions and reproductive cycle S. Zanuy and J. Planas W. Zurburg, H. Hummel, R. Bogaards, 413 Free amino acid concentrations in Mytilus edulis L. from L. de Wolf and H. Ravestein different locations in the southwestern part of the Netherlands: their possible significance as a biochemical stress indicator 419 Contraction of flap muscle in the cardioarterial valve of T. Kuramoto and A. Ebara Panulirus japonicus I. Y. Mahmoud, L. J. Guillette Jr, 423 Stress-induced changes in serum testosterone, estradiol- 17β and progesterone in the turtle, Chelydra serpentina M. E. McAsey and C. Cady 429 Resistance of mammalian red blood cells of different size to D. C. Betticher and J. Geiser hypertonic milieu 433 The effect of a carbonic anhydrase inhibitor on the electro-S. H. Hensley, J. L. Cohen and P. J. Linser retinogram of the skate (Raja oscellata) 439 Effect of salinity on the activities of digestive proteases L.-S. Fang and S.-F. Chiou from the tilapia fish, Oreochromis niloticus in different culture environments

D. H. Rhodes 445 The influence of multiple photoperiods and pinealectomy on gonads, pelage and body weight in male meadow voles, Microtus pennsylvanicus L. G. Bagley and V. L. Christensen 451 Comparisons of turkey embryos incubated in tenuous or dense gas environments-II. Organ growth A. White and T. C. Fletcher 455 The effect of physical disturbance, hypoxia and stress hormones on serum components of the plaice, Pleuronectes platessa L. M. D. Fernández-Moreno, E. Arilla 463 Effect of intestinal ischaemia on intestinal VIP levels and VIP and J. C. Prieto interaction with intestinal epithelial cells from rat G. S. G. Spencer, K. G. Hallett, Changes in the levels of growth hormones, insulin, cortisol, U. Beermann and A. A. Macdonald thyroxine and somatomedin-C/IGF-1, with increasing gestational age in the fetal pig, and the effect of thyroidectomy in utero A. Aulie, T. I. Kanui and 473 The effects of temperature on oxygen consumption of eggs and G. M. O. Maloiy hatchlings of the Nile crocodile (Crocodylus niloticus) K. Christensen, M. O. Nielsen 477 The excretion of prostacyclin (PGI₂) in milk and its possible and N. Jarløy role as a vasodilator in the mammary gland of goats J. Merchant, B. Green, M. Messer 483 Milk composition in the red-necked wallaby, Macropus rufoand K. Newgrain griseus banksianus (Marsupialia) J. L. Burke, G. E. Rice, M. M. Ralph 489 Effects of calcium availability on the release of ovine chorioand G. D. Thorburn mammotropin from cotyledonary cells incubated in vitro R. N. Hughes Essential involvement of specific legs in turn alternation of the woodlouse, Porcellio scaber Vol. 93A, No. 3 Mini Review U. Katz Strategies of adaptation to osmotic stress in anuran Amphibia under salt and burrowing conditions General Papers Water balance effects of systemic and intracerebroventricular Juan C. Reboreda and Enrique T. Segura 505 administration of angiotensin II in the toad Bufo arenarum Philip J. Stephens, Louise P. DiCola, Spike afterpotentials in single, identified fast and slow motor Paul J. Church and N. R. Dollahon neurons in the crab Pachygrapsus crassipes Jose A. L. Arruda and George Dytko 519 Permeability of the urinary bladder of the turtle, Pseudemys scripta elegans, to ammonia 523 Effects of GTP, cGMP and cAMP on the salt response of taste A. Liscia, A. M. Angioy, R. Crnjar, I. Tomassini Barbarossa and P. Pietra labellar chemosensilla in the blowfly Protophormia terraenovae Fred Punzo and Gail Huff Comparative temperature and water relations and the effects 527 of thermal acclimation on Tenebrio molitor and Tenebrio obscurus (Coleoptera: Tenebrionidae)

Pieris brassicae L.

535 Hematological assessment of temperature and oxygen stress in

a reservoir population of striped bass (Morone saxatilis)

Differential hormonal control of hemolymph carbohydrates in

R. L. Lochmiller, J. D. Weichman

L. Gourdoux, Y. Lequellec, J. Puiroux

and A. V. Zale

and R. Moreau

Michael Reitze and Udo Schöttler	549	The time dependence of adaption to reduced salinity in the lugworm Arenicola marina L. (Annelida: Polychaeta)
Michael Axelsson, Augusto S. Abe, José Eduardo P. W. Bicudo and Stefan Nilsson	561	On the cardiac control in the South American lungfish, Lepidosiren paradoxa
Janusz Gill	567	Levels of T ₄ , T ₃ and cortisol in the blood serum of the European bison (Bison bonasus) in the winter period
Richard D. Handy	571	The ionic composition of rainbow trout body mucus
Astrid J. Bårdgard, Harald Salhus and Ole Brix	577	An automated transportable high speed tunnel respirometer
S. Hoshino, S. Matsuzaki, M. Wakita, Y. Kobayashi and M. Suzuki	583	Cartilage response to thyroid hormones in the sex-linked dwarf chicken
Calogero Canicatti'	587	Evolution of the lytic system in echinoderms—II. Naturally occurring hemolytic activity in <i>Marthasterias glacialis</i> (Asteroidea) coelomic fluid
Rolf Krattenmacher and Wolfgang Clauss	593	Autoregulation of apical sodium entry in the colon of the frog (Rana esculenta)
M. V. García, J. Martín-Barrientos and J. M. Medina	597	Ammonia metabolism during the suckling period in the rat
Anthony A. Paparo	601	The effect of various salinities on whole and dissected preparations of Crassostrea virginica
M. E. Forster, W. Davison, G. H. Satchell and H. H. Taylor	607	The subcutaneous sinus of the hagfish, Eptatretus cirrhatus and its relation to the central circulating blood volume
Brian D. Anderson, Jackie J. Turner and Gary L. Bintz	613	Fatty acid synthetase in control, starved and refed Richardson's ground squirrels
M. W. Smith and M. A. Peacock	617	Comparative aspects of microvillus development in avian and mammalian enterocytes
M. W. Smith and D. Brown	623	Dual control over microvillus elongation during enterocyte development
D. J. Marlin, R. C. Harris, S. P. Gash and D. H. Snow	629	Carnosine content of the middle gluteal muscle in thorough- bred horses with relation to age, sex and training
N. I. Syed and W. Winlow	633	Morphology and electrophysiology of neurons innervating the ciliated locomotor epithelium in Lymnaea stagnalis (L.)
	645	Book Reviews
	649	Announcement
	1	Vol. 93A, No. 4
Mini Reviews		
F. C. M. Driessens, R. M. H. Verbeeck and J. W. E. van Dijk	651	Plasma calcium difference between man and vertebrates
J. Olcese and A. Wesche	655	The Harderian gland
General Papers		
D U Speeggeren	667	Silicon utilization in the brown shrimn Crangon crangon (I.)

667 Silicon utilization in the brown shrimp, Crangon crangon (L.)

D. H. Spaargaren

Ricardo J. Pollero and Horacio Heras	673	Inter-organ hemolymphatic transport of free fatty acids, tri- acylglycerols and phospholipids in the freshwater bivalve, Diplodon delodontus
Vincent W. Hylka	677	Ultrastructural and biochemical evidence of glycogen in the developing lung of the chick embryo: possible contribution to surfactant
T. Gómez, A. Lorenzo and F. Giraldez	685	Intracellular electrical potentials and membrane resistances of the duodenal epithelium in the lizard, Gallotia galloti
H. A. Verhoef and J. E. Prast	691	Effects of dehydration on osmotic and ionic regulation in Orchesella cincta (L.) and Tomocerus minor (Lubbock) (Collembola) and the role of the coelomoduct kidneys
James B. McClintock	695	The biochemical and energetic composition of somatic tissues during growth in the sea star, <i>Pycnopodia helianthoides</i> (Echinodermata, Asteroidea)
Kenth Dimberg	699	Carbonic anhydrase inhibition in vivo in rainbow trout (Salmo gairdneri) acclimated to water of different ionic and gaseous compositions
Sung Ik Yang, Mitsuhiro Furuse, Tatsuo Muramatsu and Jun-ichi Okumura	703	Responses of the pancreatic digestive enzyme secretion to various combinations of amino acids and cholecystokinin in chicks (Gallus domesticus)
C. Matsunaga, P. M. Mathiu, G. C. Whittow and H. Tazawa	707	Oxygen consumption of Brown Noddy (Anous stolidus) embryos in a quasiequilibrium state at lowered ambient temperatures
Masato Edamura and Mamoru Aoki	711	A biphasic excitability change in hindlimb motoneurons evoked by stimulation of the nucleus raphes magnus in the cat
John C. Vanatta	717	Stimulation of HCO ₃ ⁻ excretion in frog skin by urinary and adrenal cortical extracts
S. Wang, W. G. Bottje, S. Kinzler, H. L. Neldon and T. I. Koike	721	Effect of heat stress on plasma levels of arginine vasotocin and mesotocin in domestic fowl (Gallus domesticus)
W. G. Bottje and K. R. Holmes	725	Effect of hemorrhage on hepatic tissue blood flow in the domestic fowl (Gallus domesticus)
L. H. Field and HJ. Pflüger	729	The femoral chordotonal organ: a bifunctional orthopteran (Locusta migratoria) sense organ?
Jeffrey L. Ram and Sushama Patel	745	Skinned muscle fibers of Aplysia: potentiation of contraction by "background" calcium and lack of effect of cyclic AMP
Fred Punzo	751	Comparative temperature and water relations and hemolymph osmoregulation in the desert insects, <i>Taeniopoda eques</i> and <i>Schistocerca vaga</i> (Orthoptera, Acrididae)
Fred Punzo	757	Composition of the hemolymph of mygalomorph spiders (Orthognatha)
Paul G. Greenwood, Laura A. Johnson and Richard N. Mariscal	761	Depletion of ATP in suspensions of isolated cnidae: a possible role of ATP in the maturation and maintenance of anthozoan cnidae
R. A. Bell	767	Respiratory activity during embryonic development in a dia- pausing and a selected non-diapausing strain of the gypsy moth, Lymantria dispar L.
D. T. J. Littlewood	773	Aquatic and aerial respiration of Crassostrea rhizophorae

Michael De Hazan, Yaacov Lensky and Pierre Cassier	777	Effects of queen honeybee (Apis mellifera L.) ageing on her attractiveness to workers
H. Roche, K. Chaar and G. Pérès	785	The effect of a gradual decrease in salinity on the significant constituents of tissue in the sea bass (<i>Dicentrarchus labrax</i> Pisces)
Daniel Maurel, Christian Coutant and Jean Boissin	791	Effects of photoperiod, melatonin implants and castration on molting and on plasma thyroxine, testosterone and prolactin levels in the European badger (Meles meles)
James D. Robertson	799	Osmotic constituents of the blood plasma and parietal muscle of Scyliorhinus canicula (L.)
G. C. Whittow, T. N. Pettit, R. A. Ackerman and C. V. Paganelli	807	The regulation of water loss from the eggs of the red-footed booby (Sula sula)
Mark P. Richards	811	Influence of egg production on zinc, copper and iron metabolism in the turkey hen (Meleagris gallopavo)
Edith Fanta, Pedro Hélio Lucchiari and Metry Bacila	819	The effect of environmental oxygen and carbon dioxide levels on the tissue oxygenation and the behavior of Antarctic fish
N. D. de With, G. Kamerik, J. W. Slootstra, W. F. Bergema and R. C. van der Schors	833	The effects of external acidification on the ionic composition of the haemolymph, acid-base balance and sodium metabolism in the pulmonate freshwater snail, Lymnaea stagnalis
Benoit Fauconneau, Sadasivam J. Kaushik and Jean Marie Blanc	839	Uptake and metabolization of dissolved compounds in rainbow trout (Salmo gairdneri R.) fry
Aaron J. Moe, Jennifer A. Hollywood and Michael J. Jackson	845	Proton efflux from rat intestinal basal-lateral membrane vesicles is stimulated by ATP and Na ⁺
Takaji Yajima	851	Chemical specificity of short-chain fatty acid-induced electrogenic secretory response in the rat colonic mucosa
M. Fenske	857	Changes of basal and steroidal precursor-stimulated testos- terone secretion in isolated Mongolian gerbil and guinea pig testes after a single episode of heating
M. Kyriakides, C. R. McCrohan, C. T. Slade, N. I. Syed and W. Winlow	861	The morphology and electrophysiology of the neurones of the paired pedal ganglia of Lymnaea stagnalis (L.)
James E. Kench	877	Observations on the respiration of the South Atlantic hagfish, Eptatretus hexatrema Müll
A. De Santis, L. Fiore and L. Geppetti	893	Relationships between a neuronal buccal population and the peribuccal regions in Aplysia: an electrophysiological study
J. D. Thomas, C. Kowalczyk and B. Somasundaram	899	The biochemical ecology of <i>Biomphalaria glabrata</i> , a snail host of <i>Schistosoma mansoni</i> : short chain carboxylic and amino acids as phagostimulants
J. H. Brackenbury and M. S. El-Sayed	913	Effects of moderate intensity treadmill exercise on triglyceride production in the laying fowl
	919	Book Reviews

